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CLASSIFICATION ~~CONFIDENTIAL~~
 SECURITY INFORMATION
 CENTRAL INTELLIGENCE AGENCY
 INFORMATION FROM
 FOREIGN DOCUMENTS OR RADIO BROADCASTS

REPORT NO.

CD NO. --

COUNTRY USSR
 SUBJECT Economic - Coal mining
 HOW PUBLISHED Monthly periodical
 WHERE PUBLISHED Moscow
 DATE PUBLISHED Nov, Dec 1952
 LANGUAGE Russian

DATE OF INFORMATION 1952

DATE DIST. 4 MAR 1953

NO. OF PAGES 3

SUPPLEMENT TO REPORT NO.

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SOURCE Ugol', No 11, 12, 1952.EXPANSION OF USSR OPEN-PIT MININGCHEREMKHOVO DEPOSIT SUITABLE FOR OPEN-PIT MINING -- Ugol', Nov 52

Directives of the 19th Party Congress regarding the Fifth Five-Year Plan point to the necessity of increasing the capacities of existing enterprises by reconstructing them, intensifying production, and improving technological processes. In this connection, serious attention should be paid to working mines in the Chermekhovo deposit by the open-pit method.

Mining and geological conditions of the deposit permit working a considerable part of the coal reserves within the fields of existing mines by the open-pit method since the Blavnyy coal seam lies in a horizontal position, is up to 8 meters thick, and is covered by an overburden varying in thickness from 5-60 meters.

The use of modern heavy equipment creates the real possibility of extending widely the open-pit method and of increasing the actual capacity of coal enterprises. In this way, labor productivity can be increased four times, production costs reduced two to 2.5 times, inadmissably high losses of coal eliminated, and danger of underground fires avoided. In addition to this, the requirements for mine timbers drop considerably and greater work safety is assured.

There are two coal seams in the Chermekhovo deposit: the Malyy (the upper one), and the Glavnyy (the lower one), which are separated by interlayers of rock, made up of argillite or, less often, of sandstone and clays.

The Glavnyy seam is the chief one, embracing almost the entire deposit and consisting of a great number of layers of coal alternating with rock layers which make up 25-27 percent of the seam.

The Malyy seam lies in the form of separate lenses above the Glavnyy seam. It varies in thickness from 0.05-2.5 meters with an average of 0.65 meter. The layer between the coal seams is one to 3.8 meters thick.

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The rocks covering the coal seams are quaternary clays, argillaceous soils, sandstones of average hardness, and argillites.

The area is slightly hilly with sloping valleys and gullies between the hills.

At present, the Cheremkhovo deposit is worked both by underground and open-pit methods and the latter method results in the better technical and economic indexes, as is shown in the following table:

	<u>Mining Method</u>	
	<u>Underground</u>	<u>Open-Pit</u>
Cost per ton of coal mined, percent	100	59.9
Labor productivity for exploitation, percent	100	187.6
Losses in working entire seam by present methods, percent	27.3	4.7

Experimental open-pit mining in specific fields of operating mines was already begun in 1948 but operations at that time were not very effective because of the inadequate capacity of the excavators. Only in 1949, after the receipt of medium-sized excavators at the Mine imeni Kirov of the Kirovugol' Trust, was the working of a part of the mine field organized on an industrial scale by the open-pit method. Now there are open-pit sections in Mine No 3 of the Kirovugol' Trust and Mine No 8 of the Cheremkhovugol' Trust. During the first half of 1952, these sections mined 140,700 tons of coal by the open-pit method.

The labor productivity of workers in the open-pit sections is 56 percent higher and the costs per ton of coal are 35 percent lower than in the underground operations of these mines. In the first half of 1952, more than 2 million rubles were saved after the change from underground to open-pit mining. The exploitative losses of coal were reduced to 3.1 percent as against 22.8 percent in the underground sections.

Experiments have shown that it is efficient and economically advantageous to mine coal by the open-pit method when the overburden is up to 45 meters thick if the amount of overburden to be removed does not exceed 6 cubic meters per ton of coal.

The thickness of the overburden in active mines in Cheremkhovo mine fields is as follows: It is up to 15 meters deep over 22.4 percent of the coal reserves, 15-30 meters over 23.1 percent, 30-45 meters over 6.6 percent, and 45 meters over 47.9 percent. An examination of the distribution of coal reserves in active mine fields which takes into consideration the thickness of the overburden indicates that nearly 70 percent of the mine fields can be converted to a mixed method of mining with 56-60 percent of all coal reserves in these mines extracted by the open-pit method.

Slight thickness of overburden and considerable reserves of coal in sections suitable for open-pit mining create conditions for organizing open-pit mining on a large scale with the use of heavy equipment. Under the conditions prevailing in the Cheremkhovo deposit, removal operations can be carried out without the use of railroad transport with the help of heavy excavators such as the EGL-15, ESh-10/75, SE-5 and ESh-4/40. For mining operations, excavators made by the Uralmash Plant with a bucket capacity of 3 cubic meters and with lengthened working equipment for top loading may be used. -- M. M. Sokolovskiy

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VAKHRUSHEVUGOL' TRUST HEAVY EXCAVATION EQUIPMENT -- Ugol', Dec 52

Specific conditions in the Vakhrushevugol' Trust open pits, in particular the great thickness of the coal seam and overburden, favor the use of a combination method of mining in which heavy excavation equipment is used to move waste rock into the worked-out area of the pits and the pit railroad system is simplified by a decrease in the number of transport levels. Apparently railroad transport is still used for removal of overburden to dumps outside the pits.

The most favorable units of the trust for the use of heavy excavation equipment are open pits No 1, 2, and 3 where there is a working front of 2,200-2,700 meters. The best technical and economic indexes are achieved here by the combined efforts of the EGL-10 power shovel and the ESh-10/75 or ESh-14/75 draglines.

The working front of the power shovel is divided into two parts, a development section and an extraction section. It should carry out its operations in the overburden-removal section 5-10 days more quickly than the time allotted for the extraction of reserves in the extraction section.

The EGL-15 power shovel available to the pits can be used efficiently on a 2,000-meter working front. The section where it is assigned to operate should be the point where the seam dips farthest from the surface in pit No 1 and, in part, in pits No 2 and 3. In connection with the EGL-15 power shovel, it is expedient to use one heavy ESh-10/75 or ESh-14/75 dragline or one or two ESh-1 draglines.

If an EGL-15 power shovel is used in a seam 26 meters thick, it can remove 11,000 cubic meters or 14,000 tons per day. An EGL-10 power shovel can remove 8,500 cubic meters or 11,000 tons per day. -- V. V. Rzhevskiy, B. A. Simkin

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